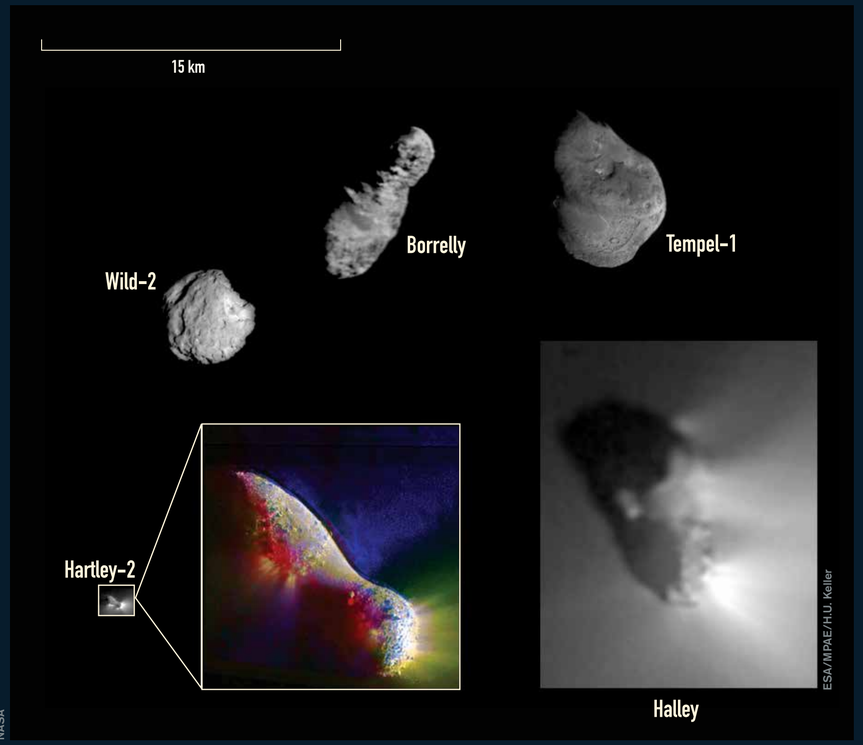
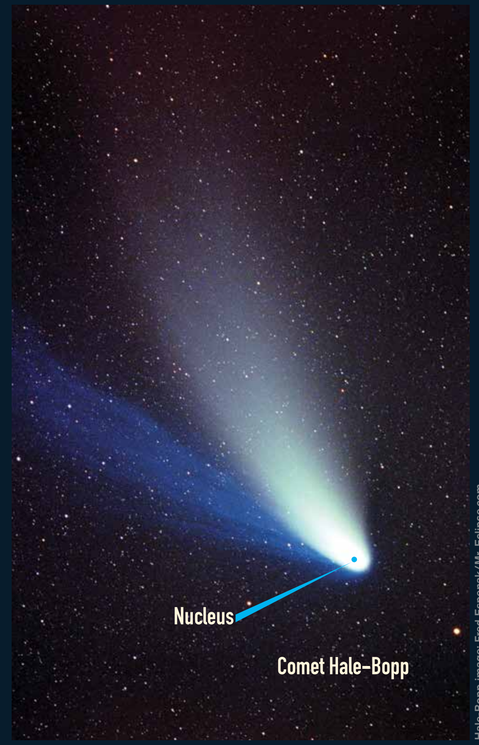
STATION 06 Messengers from the Early Solar System

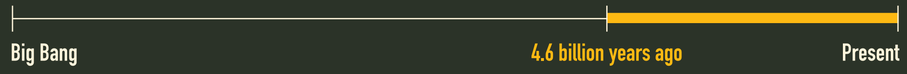




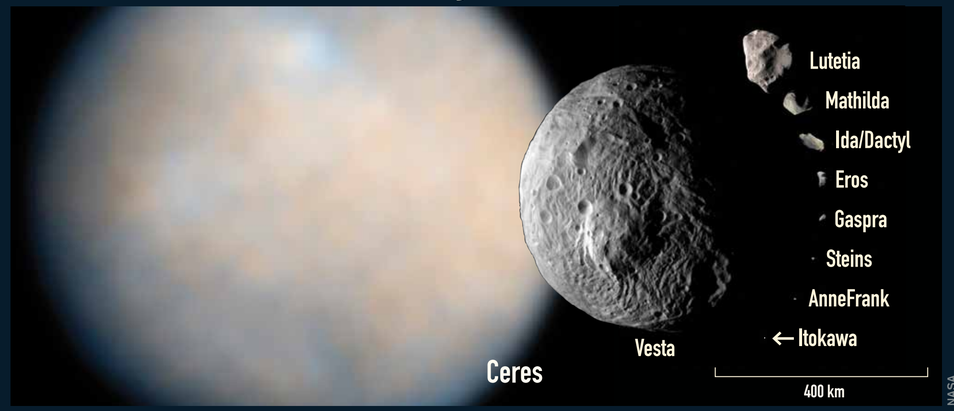
FIVE COMET NUCLEI IMAGED BY SPACECRAFT: Active vents of comet Halley (lower middle) release jets of gas and dust that are seen as white streaks in reflected sunlight. The largest nucleus measured was of Hale-Bopp (70 kilometers; about 6 times larger than Halley's nucleus).

Comets and asteroids formed during collapse of the natal molecular cloud core, and their compositions depend greatly on the time and place of their formation. As remnants of the early Solar System, comets and asteroids are central to understanding its origin and formation. Many asteroids appear to be the shattered remnants of primitive rocks.

COMET NUCLEUS
The iconic object above is a scale model of the nucleus of comet 103P/Hartley-2. Small bodies, such as comets and asteroids, have very irregular shapes due to their small masses (and thus, low gravity). Shape model courtesy of the EPOXI team and the PDS Small Bodies Node/P. Thomas & T. Farnham.



Asteroids Come in Many Sizes



LARGE ASTEROIDS ARE DWARF PLANETS: Small asteroids are rubble piles, but large asteroids like Ceres and Vesta may have a layered internal structure, or even a core. Ceres (the largest known asteroid) is 950 kilometers (km) in diameter. Vesta is 530 km across. For comparison, Earth is 12,742 km across, Mars is 6,779 km, and Pluto is 2,390 km.

NASA spacecraft visited several comets and asteroids, and even brought material from comet Wild-2 back to Earth.

Goddard scientists found glycine, a building block of life, in samples of Wild-2 collected by the Stardust spacecraft.